

WHAT IS CLAIMED IS:

1. A lighting control system for managing utility operation parameters comprising:
a ballast control module configured to communicate with a lighting ballast;
a data processing module connected to the ballast control module via a wireless communications link; and
a wireless internet control center wirelessly connected to the ballast control module via the data processing module and arranged to operate a plurality of utility operation applications.
2. The lighting control system of claim 1, further comprising a plurality of repeaters connected to the data processing module.
3. The lighting control system of claim 1, wherein the communications link between the data processing module and the ballast control module is a local area network.
4. The lighting control system of claim 1, wherein the communications link between the data processing module and the ballast control module is a wide area network.
5. The system of claim 1, wherein the ballast control module is connected to the lighting ballast via a low voltage interface.
6. The system of claim 1, wherein the ballast control module is connected to the lighting ballast via a power line carrier.

7. The system of claim 1, wherein the ballast control module is connected to the lighting ballast via a digital addressable lighting interface (DALI).
8. The system of claim 1, wherein the ballast includes fluorescent ballasts and high intensity ballasts.
9. The system of claim 1, wherein the lighting ballast is electronic.
10. The system of claim 1, wherein the lighting ballast is magnetic.
11. The system of claim 1, wherein the ballast control module is integrated directly into the lighting ballast.
12. The system of claim 11, wherein the lighting ballast supplies power to the ballast control module.
13. The system of claim 1, wherein the ballast control module includes a maintenance feedback portion to monitor and provide alerts when there is a ballast or lamp failure.
14. The system of claim 1, wherein the ballast control module comprises:
a potentiometer arranged to generate signals, voltages and resistances to operate the lighting ballasts;

a microcontroller arranged to convert internet protocol to local area network protocol and vice versa, and to control traffic flow, data storage and logic of the ballast control module; and

an RF radio cartridge decoder arranged to connect portions of the ballast control module to the communications link, wherein the RF radio cartridge transmits data at multiple frequencies at both fast and slow transfer rates.

15. The system of claim 13, wherein the microcontroller further processes commands received by the lighting ballast and the data processing module.

16. The system of claim 1, wherein the ballast control module further comprises:

a dimming control configured to directly control light intensity of the lighting ballast;
and

a switching mechanism arranged to provide power to the lighting ballast; and

a transformer arranged to supply a low power voltage to the dimming control and a high power voltage to the switching mechanism.

17. The system of claim 16, wherein the switching mechanism is a solid state switch or electronic triac.

18. The system of claim 17, wherein the switching mechanism is arranged for high frequency switching to indirectly vary the light intensity of the lighting ballast.

19. The system of claim 1, wherein the data processing module includes:

a communications cartridge encoder adapted to provide secure transmission of data from the wireless internet control center via the communications link;

a microcontroller arranged to convert wireless WAN transmissions from the wireless internet control center to LAN transmissions for forwarding to the ballast control module;
and

a wireless WAN TCPIP gateway arranged to connect the data processing module to the internet control center.

20. The system of claim 18, wherein the microprocessor includes an embedded operating system for local operation of the system.

21. The system of claim 18, wherein the microprocessor includes an embedded RAM chip containing scheduling functions for local operation of the lighting ballasts.

22. The system of claim 1, wherein the wireless internet control center includes:
a network operation center adapted to wirelessly connect the wireless internet control center and the wireless data processing module;
a database server arranged to manage system information; and
an applications server containing at least one utility operation application configured to operate the lighting system.

23. The system of claim 22, wherein the at least one application includes at least one of light scheduling, zone grouping of the lighting ballasts, energy monitoring, load management, maintenance, and light intensity.

24. The system of claim 23, wherein the light scheduling application includes one of a lighting ramp-start process and a light sweeping process.

25. The system of claim 23, wherein the energy monitoring application monitors and controls the power consumption of the lighting system.

26. The system of claim 22, wherein the system information includes building information, lighting zone control information, user names, and passwords.